US 20210346367A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2021/0346367 A1**

**Kahne et al.** (43) **Pub. Date: Nov. 11, 2021**

(54) **O-GLCNAC TRANSFERASE INHIBITORS AND USES THEREOF**

(71) Applicants: **President and Fellows of Harvard College**, Cambridge, MA (US); **The United States of America, as represented by the Secretary, Department of Health and Human Servic**, Bethesda, MD (US)

(72) Inventors: **Suzanne Walker Kahne**, Cambridge, MA (US); **Sara Evelyn Schwanger Martin**, Cambridge, MA (US); **Craig Joseph Thomas**, Gaithersburg, MD (US); **Damien Yves Duveau**, Germantown, MD (US)

(73) Assignees: **President and Fellows of Harvard College**, Cambridge, MA (US); **The United States of America, as represented by the Secretary, Department of Health and Human Servic**, Bethesda, MD (US)

(21) Appl. No.: **17/271,793**

(22) PCT Filed: **Aug. 29, 2019**

(86) PCT No.: **PCT/US2019/048805**

§ 371 (c)(1),
(2) Date: **Feb. 26, 2021**

**Related U.S. Application Data**

(60) Provisional application No. 62/724,479, filed on Aug. 29, 2018.

**Publication Classification**

(51) **Int. Cl.**

| | |
|---|---|
| ***A61K 31/4709*** | (2006.01) |
| ***A61K 45/06*** | (2006.01) |
| ***C07D 409/12*** | (2006.01) |

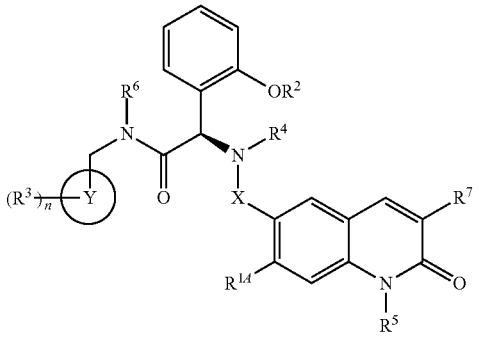
(52) **U.S. Cl.**

CPC ..... ***A61K 31/4709*** (2013.01); ***C07D 409/12*** (2013.01); ***A61K 45/06*** (2013.01)

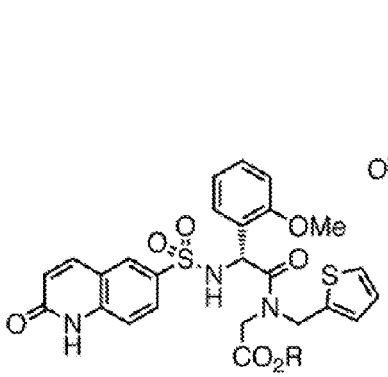
(57) **ABSTRACT**

Provided herein are O-GlcNAc transferase (OGT) inhibitor compounds of Formula (I), and pharmaceutically acceptable salts, solvates, hydrates, polymorphs, co-crystals, tautomers, stereoisomers, isotopically labeled derivatives, prodrugs, and compositions thereof. Also provided are methods and kits involving the inventive compounds or compositions for treating and/or preventing diseases (e.g., diabetes and complications thereof, neurodegenerative diseases, proliferative diseases such as cancers, autoimmune diseases, and inflammatory diseases) in a subject. Provided are methods of inhibiting OGT in a subject or biological sample.

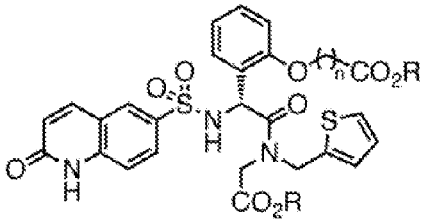
(I')



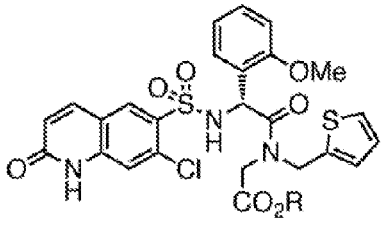
**Specification includes a Sequence Listing.**



**1a/1b** R=H/Me



**2a/2b** n=3, R=H/Et
**3a/3b** n=4, R=H/Me



**4a/4b** R=H/Et